

## RELIABILITY PREDICTION STANDARD REPORT

(Sorted by Part Number)

MIL-HDBK-217F, Notice 2

PRED-FIRST (c) Reliability Prediction Program, BJM Engineering Services

Date: OCT-06-2011

End Item Title : RHX SERIES MTBF

End Item Part Number : RHI-6460P (RoHS)

RHI-6460P (RoHS) MTBF: 271,456

Module Title: ZIPPY TECHNOLOGY CORP

Module Part Number : HP2/MTBF

Power Unit Module : HP2-6500P-R (RoHS)

Environmental Condition: GB

Ambient Temperature: 25°C

### RELIABILITY MODELING OF REDUNDANT UNITS

Two Redundant Units:

Two identical units may be connected in parallel, each capable of supplying the total required output. If one unit fails and can be removed from the system ( does not interfere with the operation of the other unit ), then the other unit supplies the required output. Using a constant failure rate, the following relations apply.

$$\begin{aligned}\text{MTBF} &= (1/\lambda) + (1/\lambda) - (1/(\lambda + \lambda)) \\ &= 3/2 \lambda\end{aligned}$$

$\lambda$  = failure rate per million hours

$$\text{RHI-6460P (RoHS)(MTBF)} = 3/2 \lambda = 3/2 \times 180,971 = 271,456$$

ZIPPY TECHNOLOGY CORP  
10F, No.50, MIN CHYUAN RD  
SHIN-TIEN, TAIPEI HSIEN, TAIWAN, R.O.C.

| RELIABILITY PREDICTION STANDARD REPORT    |            |                             |         |       |              |              |
|-------------------------------------------|------------|-----------------------------|---------|-------|--------------|--------------|
|                                           |            | (Sorted by Part Number)     |         |       |              |              |
|                                           |            | MIL - HDBK - 217F, Notice 2 |         |       |              |              |
|                                           |            |                             |         |       |              |              |
| Date : OCT-06-2011      Time : 10:29:32   |            |                             |         |       |              |              |
| End Item Title : HP2 SERIES MTBF          |            |                             |         |       |              |              |
| End Item Part Number : HP2-6500P-R (RoHS) |            |                             |         |       |              |              |
| Module Title : ZIPPY TECHNOLOGY CORP      |            |                             |         |       |              |              |
| Module Part Number : HP2 / MTBF           |            |                             |         |       |              |              |
| Module Reference Designation : HP2        |            |                             |         |       |              |              |
| Environmental Condition : GB              |            |                             |         |       |              |              |
| Ambient Temperature: 25°C                 |            |                             |         |       |              |              |
|                                           |            |                             |         |       |              |              |
| <b><u>HP2-6500P-R (RoHS)</u></b>          |            |                             |         |       |              |              |
|                                           |            |                             |         |       |              |              |
| ITEM                                      | Part       | Ref                         | Qual    | Quant | Individual   | Total        |
| #                                         | Number     | Desig                       | Level   |       | Failure Rate | Failure Rate |
|                                           |            |                             |         |       | (F/10^6Hrs)  | (F/10^6Hrs)  |
| 1                                         | B100370007 | BOM                         | NMIL    | 1     | 0.261414     | 0.261414     |
| 2                                         | B101820003 | BOM                         | NMIL    | 1     | 0.225728     | 0.225728     |
| 3                                         | B200000001 | BOM                         | SPECIAL | 3     | 0.094935     | 0.284805     |
| 4                                         | B200000080 | BOM                         | SPECIAL | 2     | 0.094935     | 0.189870     |
| 5                                         | B200000082 | BOM                         | SPECIAL | 1     | 0.094935     | 0.094935     |
| 6                                         | B200000177 | BOM                         | SPECIAL | 1     | 0.096454     | 0.096454     |
| 7                                         | B200010002 | BOM                         | NMIL    | 2     | 0.042062     | 0.084124     |
| 8                                         | B200010004 | BOM                         | NMIL    | 2     | 0.038405     | 0.076810     |
| 9                                         | B200010022 | BOM                         | NMIL    | 1     | 0.000162     | 0.000162     |
| 10                                        | B200010076 | BOM                         | NMIL    | 2     | 0.042062     | 0.084124     |
| 11                                        | B200020004 | BOM                         | NMIL    | 5     | 0.005156     | 0.025780     |
| 12                                        | B200020015 | BOM                         | NMIL    | 1     | 0.006751     | 0.006751     |
| 13                                        | B200020019 | BOM                         | NMIL    | 2     | 0.006751     | 0.013502     |
| 14                                        | B200030018 | BOM                         | NMIL    | 1     | 0.007617     | 0.007617     |
| 15                                        | B200040003 | BOM                         | NMIL    | 1     | 0.002929     | 0.002929     |
| 16                                        | B200040006 | BOM                         | NMIL    | 1     | 0.008036     | 0.008036     |
| 17                                        | B200040007 | BOM                         | NMIL    | 1     | 0.016369     | 0.016369     |
| 18                                        | B200040019 | BOM                         | NMIL    | 1     | 0.016369     | 0.016369     |
| 19                                        | B200040028 | BOM                         | NMIL    | 1     | 0.005967     | 0.005967     |
| 20                                        | B200040030 | BOM                         | NMIL    | 1     | 0.016369     | 0.016369     |
| 21                                        | B200040034 | BOM                         | NMIL    | 2     | 0.005967     | 0.011934     |
| 22                                        | B200040054 | BOM                         | NMIL    | 1     | 0.002929     | 0.002929     |
| 23                                        | B200050032 | BOM                         | NMIL    | 1     | 0.005218     | 0.005218     |
| 24                                        | B200050037 | BOM                         | NMIL    | 4     | 0.005218     | 0.020872     |
| 25                                        | B200050044 | BOM                         | NMIL    | 2     | 0.005218     | 0.010436     |

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|    |            |     |      |   |          |          |
|----|------------|-----|------|---|----------|----------|
| 26 | B200060007 | BOM | NMIL | 1 | 0.014841 | 0.014841 |
| 27 | B200090006 | BOM | NMIL | 1 | 0.001518 | 0.001518 |
| 28 | B200110001 | BOM | NMIL | 1 | 0.004650 | 0.004650 |
| 29 | B200110034 | BOM | NMIL | 1 | 0.004650 | 0.004650 |
| 30 | B200110035 | BOM | NMIL | 2 | 0.004650 | 0.009300 |
| 31 | B200110040 | BOM | NMIL | 2 | 0.004650 | 0.009300 |
| 32 | B200110046 | BOM | NMIL | 4 | 0.004650 | 0.018600 |
| 33 | B200110073 | BOM | NMIL | 7 | 0.005115 | 0.035805 |
| 34 | B200110078 | BOM | NMIL | 1 | 0.004650 | 0.004650 |
| 35 | B200110087 | BOM | NMIL | 1 | 0.004650 | 0.004650 |
| 36 | B200110091 | BOM | NMIL | 1 | 0.004650 | 0.004650 |
| 37 | B200110111 | BOM | NMIL | 1 | 0.004650 | 0.004650 |
| 38 | B200110119 | BOM | NMIL | 1 | 0.004650 | 0.004650 |
| 39 | B200110120 | BOM | NMIL | 5 | 0.004650 | 0.023250 |
| 40 | B200110130 | BOM | NMIL | 1 | 0.004650 | 0.004650 |
| 41 | B200110138 | BOM | NMIL | 1 | 0.004650 | 0.004650 |
| 42 | B200110162 | BOM | NMIL | 1 | 0.004650 | 0.004650 |
| 43 | B200110172 | BOM | NMIL | 7 | 0.004650 | 0.032550 |
| 44 | B200110190 | BOM | NMIL | 3 | 0.004650 | 0.013950 |
| 45 | B200110198 | BOM | NMIL | 1 | 0.004650 | 0.004650 |
| 46 | B200110202 | BOM | NMIL | 4 | 0.004650 | 0.018600 |
| 47 | B200110227 | BOM | NMIL | 2 | 0.004650 | 0.009300 |
| 48 | B200110238 | BOM | NMIL | 2 | 0.005115 | 0.010230 |
| 49 | B200110282 | BOM | NMIL | 2 | 0.004650 | 0.009300 |
| 50 | B200110293 | BOM | NMIL | 2 | 0.005115 | 0.010230 |
| 51 | B200110301 | BOM | NMIL | 2 | 0.004650 | 0.009300 |
| 52 | B200110327 | BOM | NMIL | 4 | 0.004650 | 0.018600 |
| 53 | B200110340 | BOM | NMIL | 2 | 0.004650 | 0.009300 |
| 54 | B200110382 | BOM | NMIL | 2 | 0.005115 | 0.010230 |
| 55 | B200110402 | BOM | NMIL | 2 | 0.004650 | 0.009300 |
| 56 | B200110406 | BOM | NMIL | 2 | 0.004650 | 0.009300 |
| 57 | B200110413 | BOM | NMIL | 1 | 0.005115 | 0.005115 |
| 58 | B200110422 | BOM | NMIL | 1 | 0.004650 | 0.004650 |
| 59 | B200110630 | BOM | NMIL | 1 | 0.004650 | 0.004650 |
| 60 | B200120014 | BOM | NMIL | 1 | 0.008705 | 0.008705 |
| 61 | B200120031 | BOM | NMIL | 1 | 0.006870 | 0.006870 |
| 62 | B200120042 | BOM | NMIL | 1 | 0.008705 | 0.008705 |
| 63 | B200120066 | BOM | NMIL | 1 | 0.007735 | 0.007735 |
| 64 | B200120088 | BOM | NMIL | 1 | 0.006870 | 0.006870 |
| 65 | B200120118 | BOM | NMIL | 1 | 0.006105 | 0.006105 |
| 66 | B200120119 | BOM | NMIL | 1 | 0.005425 | 0.005425 |
| 67 | B200140011 | BOM | NMIL | 1 | 0.035297 | 0.035297 |
| 68 | B200140015 | BOM | NMIL | 1 | 0.067385 | 0.067385 |
| 69 | B200160012 | BOM | NMIL | 1 | 0.065000 | 0.065000 |

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|     |            |     |                                                |   |          |                |
|-----|------------|-----|------------------------------------------------|---|----------|----------------|
| 70  | B200170002 | BOM | NMIL                                           | 6 | 0.002316 | 0.013896       |
| 71  | B200180005 | BOM | N/A                                            | 1 | 0.009769 | 0.009769       |
| 72  | B200180015 | BOM | N/A                                            | 1 | 0.008923 | 0.008923       |
| 73  | B200200007 | BOM | N/A                                            | 1 | 0.007144 | 0.007144       |
| 74  | B200200013 | BOM | N/A                                            | 2 | 0.009203 | 0.018406       |
| 75  | B200200018 | BOM | N/A                                            | 1 | 0.011856 | 0.011856       |
| 76  | B200200020 | BOM | N/A                                            | 2 | 0.011856 | 0.023712       |
| 77  | B200200037 | BOM | N/A                                            | 1 | 0.012930 | 0.012930       |
| 78  | B200200047 | BOM | N/A                                            | 2 | 0.008470 | 0.016940       |
| 79  | B200200054 | BOM | N/A                                            | 1 | 0.014056 | 0.014056       |
| 80  | B200210004 | BOM | N/A                                            | 2 | 0.006740 | 0.013480       |
| 81  | B200220010 | BOM | N/A                                            | 1 | 0.002761 | 0.002761       |
| 82  | B200220028 | BOM | N/A                                            | 1 | 0.002647 | 0.002647       |
| 83  | B200230036 | BOM | N/A                                            | 1 | 0.051316 | 0.051316       |
| 84  | B200230100 | BOM | N/A                                            | 2 | 0.059141 | 0.118282       |
| 85  | B200230119 | BOM | N/A                                            | 2 | 0.063619 | 0.127238       |
| 86  | B200230149 | BOM | N/A                                            | 2 | 0.055698 | 0.111396       |
| 87  | B200230192 | BOM | N/A                                            | 1 | 0.236151 | 0.236151       |
| 88  | B200230198 | BOM | N/A                                            | 2 | 0.059141 | 0.118282       |
| 89  | B200230210 | BOM | N/A                                            | 1 | 0.051316 | 0.051316       |
| 90  | B200230235 | BOM | N/A                                            | 1 | 0.014800 | 0.014800       |
| 91  | B200230275 | BOM | N/A                                            | 2 | 0.029596 | 0.059192       |
| 92  | B200230277 | BOM | N/A                                            | 3 | 0.042157 | 0.126471       |
| 93  | B200250009 | BOM | NMIL                                           | 1 | 0.023531 | 0.023531       |
| 94  | B200250012 | BOM | NMIL                                           | 3 | 0.023531 | 0.070593       |
| 95  | B200260054 | BOM | NMIL                                           | 1 | 0.027879 | 0.027879       |
| 96  | B200260083 | BOM | NMIL                                           | 1 | 0.027879 | 0.027879       |
| 97  | B200260084 | BOM | NMIL                                           | 1 | 0.027879 | 0.027879       |
| 98  | B200260085 | BOM | NMIL                                           | 1 | 0.027879 | 0.027879       |
| 99  | B200260086 | BOM | NMIL                                           | 1 | 0.027879 | 0.027879       |
| 100 | B200260098 | BOM | NMIL                                           | 1 | 0.027879 | 0.027879       |
| 101 | B200280012 | BOM | NMIL                                           | 3 | 0.015958 | 0.047874       |
| 102 | B200290009 | BOM | NMIL                                           | 2 | 0.013740 | 0.027480       |
| 103 | B200300106 | BOM | NMIL                                           | 1 | 0.003907 | 0.003907       |
| 104 | B200300107 | BOM | NMIL                                           | 1 | 0.026562 | 0.026562       |
| 105 | B210110021 | BOM | KNOWNFR                                        | 1 | 1.797429 | 1.797429       |
| 106 | B210160021 | BOM | N/A                                            | 1 | 0.010000 | 0.010000       |
| 107 | B210190187 | N/A | STANDAND                                       | 1 | 0.022077 | 0.022077       |
| 108 | B210190758 | N/A | STANDARD                                       | 1 | 0.022077 | 0.022077       |
|     |            |     |                                                |   |          |                |
|     |            |     |                                                |   |          |                |
|     |            |     | Total Failure Rate (F/10^6Hrs) :               |   |          | 5.525738       |
|     |            |     | Mean Time (in hours) Between Failures (MTBF) : |   |          | <b>180,971</b> |